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UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

6004196

December 21, 1999

**Polishing pad refurbisher for in situ, real-time
conditioning and cleaning of a polishing pad used in
chemical-mechanical polishing of microelectronic substrates**

REISSUE: December 19, 2001 - Reissue Application filed Ex. Gp.: 3725; Re. S.N. 10/054,692 August 6, 2002

CERT-CORRECTION: May 15, 2001, a Certificate of Correction was issued for this patent

APPL-NO: 032230 (00)

FILED-DATE: February 27, 1998

GRANTED-DATE: December 21, 1999

ENGLISH-ABST:

A pad refurbisher that provides in situ, real-time conditioning and/or cleaning of a polishing surface on a polishing pad used in chemical-mechanical polishing of a semiconductor wafer and other microelectronic substrates. The pad refurbisher has a body adapted for attachment to a wafer carrier of a chemical-mechanical polishing machine, and a refurbishing element connected to the body. The body has a distal face positioned proximate to a perimeter portion of the wafer carrier and facing generally toward the polishing surface of the polishing pad. The body travels with the wafer carrier as the wafer carrier moves over the polishing pad. The refurbishing element is connected to the distal face of the body so that the refurbishing element can operatively engage the polishing surface substantially adjacent to the perimeter of the wafer carrier. The refurbishing element is a pad conditioning device and/or a pad cleaning device that conditions and/or cleans the polishing surface of the pad to remove waste particles from the polishing surface of the polishing pad and place the pad in a desired polishing condition. In operation, the refurbishing element travels with the wafer carrier and is selectively engaged with the polishing surface while the wafer carrier presses the wafer against the polishing surface to selectively condition and/or clean generally only the deteriorated areas on the pad.

(C) QUESTEL 1994
QUESTEL.ORBIT (TM) 1998

Selected file: PLUSPAT

** SS 1: Results 1

I / 1 PLUSPAT - ©QUESTEL-ORBIT
PN - US6004196 A 19991221 [US6004196]
TI - (A) Polishing pad refurbisher for in situ, real-time conditioning and cleaning of a polishing pad used in chemical-mechanical polishing of microelectronic substrates
PA - (A) MICRON TECHNOLOGY INC (US)
IN - (A) DOAN TRUNG T (US); SANDHU GURTEJ S (US)
AP - US3223098 19980227 [1998US-0032230]
PR - US3223098 19980227 [1998US-0032230]
IC - (A) B24B-007/08
EC - B24B-037/04I
B24B-053/007
B24D-007/18
PCL - ORIGINAL (O) : 451443000; CROSS-REFERENCE (X) : 451287000
451290000 451444000
DT - Basic
CT - US5584751; US5595527; US5664987; US5775983; US5782675; US5785585;
US5823854; US5851138; US5885137; US5885147
STG - (A) United States patent

AB - A pad refurbisher that provides in situ, real-time conditioning and/or cleaning of a polishing surface on a polishing pad used in chemical-mechanical polishing of a semiconductor wafer and other microelectronic substrates. The pad refurbisher has a body adapted for attachment to a wafer carrier of a chemical-mechanical polishing machine, and a refurbishing element connected to the body. The body has a distal face positioned proximate to a perimeter portion of the wafer carrier and facing generally toward the polishing surface of the polishing pad. The body travels with the wafer carrier as the wafer carrier moves over the polishing pad. The refurbishing element is connected to the distal face of the body so that the refurbishing element can operatively engage the polishing surface substantially adjacent to the perimeter of the wafer carrier. The refurbishing element is a pad conditioning device and/or a pad cleaning device that conditions and/or cleans the polishing surface of the pad to remove waste particles from the polishing surface of the polishing pad and place the pad in a desired polishing condition. In operation, the refurbishing element travels with the wafer carrier and is selectively engaged with the polishing surface while the wafer carrier presses the wafer against the polishing surface to selectively condition and/or clean generally only the deteriorated areas on the pad.

I / 1 LGST - ©LEGSTAT
PN - US 6004196 [US6004196]
AP - US 32230/98 19980227 [1998US-0032230]
DT - US-P
ACT - 19980227 US/AE-A
APPLICATION DATA (PATENT)
US 32230/98 19980227 [1998US-0032230]

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PATENT

20010515 US/CC

CERTIFICATE OF CORRECTION

20020806 US/RF
REISSUE APPLICATION FILED
20011219
UP - 2002-35

1 / 1 CRXX - @CLAIMS/RRX
PN - 6,004,196 A 19991221 [US6004196]
PA - Micron Technology Inc
ACT - 20011219 REISSUE REQUESTED
ISSUE DATE OF O.G.: 20020806
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1 / 2 PAST - @Thomson Derwent
AN - 200232-001622
PN - 6004196 A [US6004196]
OG - 2002-08-06
ACT - REISSUE APPLICATION FILED

2 / 2 PAST - @Thomson Derwent
AN - 200120-000138
PN - 6004196 A [US6004196]
OG - 2001-05-15
ACT - CERTIFICATE OF CORRECTION

Selected file: INPADOC

** SS 1: Results 1

1 / 1 INPADOC - @INPADOC
PN - US 6004196 A 19991221 [US6004196]
TI - POLISHING PAD REFURBISHER FOR IN SITU, REAL-TIME CONDITIONING AND
CLEANING OF A POLISHING PAD USED IN CHEMICAL-MECHANICAL POLISHING
OF MICROELECTRONIC SUBSTRATES
IN - DOAN TRUNG T [US]; SANDHU GURTEJ S [US]
PA - MICRON TECHNOLOGY INC [US]
AP - US 32230/98-A 19980227 [1998US-0032230]
PR - US 32230/98-A 19980227 [1998US-0032230]
IC - B24B-007/08

1 / 1 LEGALI - @LEGSTAT
PN - US 6004196 [US6004196]
AP - US 32230/98 19980227 [1998US-0032230]
DT - US-P
ACTE - 19980227 US/AE-A
APPLICATION DATA (PATENT)
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